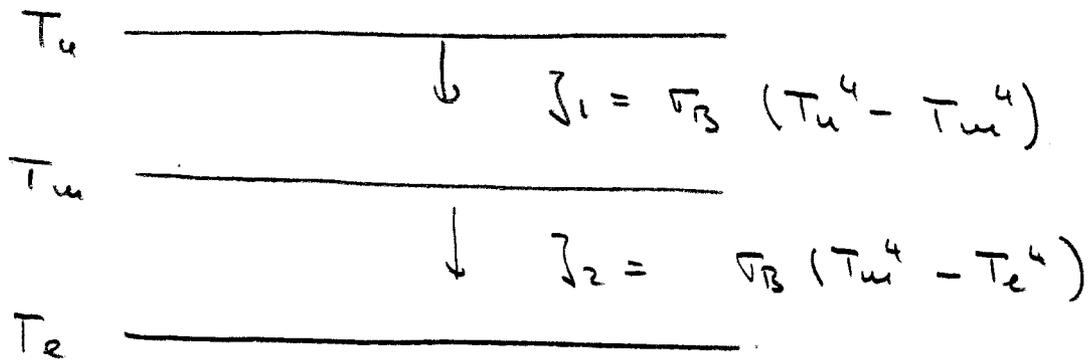


8)



$$J_1 = J_2 \quad (\text{equilibrium})$$

$$\Rightarrow T_u^4 - T_m^4 = T_m^4 - T_e^4$$

$$\Rightarrow \boxed{T_u^4 + T_e^4 = 2T_m^4}$$

$$\begin{aligned} \Rightarrow J_1 &= \sigma_B (T_u^4 - T_m^4) = \sigma_B \left[T_u^4 - \frac{T_u^4 + T_e^4}{2} \right] \\ &= \sigma_B \left[\frac{T_u^4 - T_e^4}{2} \right] \end{aligned}$$

\Rightarrow Inserting N independent heat shields between the planes

T_u and T_e decrease the net energy flux density by a factor $(N+1)$